19 Nov 99

MEMORANDUM FOR SEE DISTRIBUTION

FROM: HQ AFCESA/CEO
139 Barnes Drive Suite 1
Tyndall AFB FL 32403-5319

SUBJECT: Electrical Systems Utilization & Training Workshop (U&TW) Minutes

1. **PURPOSE:** To review and align AFMAN 36-2108 with the Career Field Education and Training Plan (CFETP). To determine true 3-level student training requirements, Career Development Course (CDC) requirements, verify/identify core tasks, *identify Mission Ready Airman (MRA) requirements*, and review supplemental courses to meet the future training needs for the career field.

2. **LOCATION:** 366th Training Squadron, Sheppard AFB, TX.

3. **DATES:** 15-19 Nov 1999

4. **ATTENDEES:** SMSgt Glenn L. Deese, HQ AFCESA/CEOT, chaired the workshop. See Attachment 2 for list of attendees.

5. **SUMMARY:** Modified the Electrical Systems CFETP to meet existing requirements and aligned 3/5/7-level training requirements to match. Verified/identified core tasks and identified future training needs for the Electrical Systems career field through supplemental training.

6. **DISCUSSION:**

a. Opening remarks: Col Kwallek, 782 TRG/CC, opened the workshop by welcoming all attendees and pointing out the significance each member would play in the workshop. Ms. Georges, 3E0X1 Training Manager, 366 TRS, echoed the welcoming and briefed the attendees on administrative matters.

b. U&TW Objectives/Rules of Engagement/Introductions: Civil Engineer Enlisted Career Field Manager, Chief Mike Gelsleichter, HQ AFCESA/CEOT, briefed attendees on the U&TW process. He also pointed out the importance of this workshop and how significant each member's role was to producing a quality product. He then introduced the chairman for the Electrical Systems U&TW, SMSgt Glenn L. Deese, HQ AFCESA/CEOT. SMSgt Deese briefed the rules of engagement, and led the group through a get-acquainted exercise.

c. Community College of the Air Force (CCAF) Briefing: MSgt Mike Hudgens, ECI, provided the CCAF briefing and passed out a handout on the Electrical Systems Degree Requirements. He gave a brief history of CCAF and identified the method CCAF uses to determining how courses qualify to earn degree semester hours.

d. Civil Engineer Craftsman 7-Level Course (J3ACR3E070-000) Briefing: Chief Wallace, 366 TRS/CCM, briefed the origin of the 10 day CE craftsman course and how it came as a result of the Year of Training (YOT) initiative. He gave a brief overview of the course content and emphasized the importance of all attendees meeting the prerequisites before attending this CE management course. Prerequisites are as follows: 100% core-task qualified, complete Read Ahead Material (RAM), SSgt as a minimum, and enrolled in 7-level UGT for at least 12 months. He emphasized that students not meeting prerequisites will be sent home.

e. Training Evaluation Programs Briefing: MSgt Nick Marks, 782d TRG, briefed initial results of the recent Field Evaluation Questionnaire (FEQ) for the Electrical Systems Apprentice Course. He also handed out data on the recent Graduate Assessment Survey (GAS) results and the Training Assessment System (TAS) survey results. He indicated that the trends and comments made on these surveys may be of benefit to the U&TW representatives during their discussion of tasks required for this AFS.

f. Expeditionary Aerospace Force (EAF) Briefing: Chief Rich Park, AF ILEM, presented a thorough overview of the EAF concept and structure. He briefed on expected benefits, stability and predictability, personnel can expect from the concept. He also explained the new make-up of the CE Unit Type Codes (UTC) and how they will deploy. He also touched on the effect EAF will have on training and how training must be accomplished to meet our wartime mission.

g. Privatization Briefing: SMSgt Deese presented an update on the overall privatization effort for CE. He stated that even though a base might privatize the exterior electrical distribution system, the core tasks related to that system will still be a requirement for upgrade training and necessary to maintain readiness. CE units will have to develop training plans identifying alternate training sources and budget accordingly. Periodic recurring training will also be necessary to maintain proficiency to ensure readiness.

h. Review AFMAN 36-2108: SMSgt Deese gave a short brief of how the review process would take place. The group then reviewed AFMAN 36-2108 and recommended changes. See attachment 3 for the recommended changes.

i. CFETP Part 1 Review: A review of the CFETP Part 1 was conducted to reflect the appropriate changes, additions and deletions. Again, the group made several minor recommendations and approved them without opposition. See attachment 4 for the recommended changes.

j. Mission Ready Airman Brief: Chief Park gave a short briefing on the definition of MRA and how MRA fits into the process to determine proficiency codes. He also briefed what should be looked at when determining codes for all areas in the training process.

k. Occupational Measurement Squadron (OMS) Briefing: Mr. Jim Earles, AFOMS/OMYO, gave the AF OMS briefing. The mission of AFOMS is to improve AF capability by providing quality occupational analysis, Specialty knowledge Tests (SKT), and study guides to support AF personnel management programs. AFOMS evaluates each career field every 3-5 years or as needed. Mr. Earles pointed out that analysis provided by AFOMS serves as a foundation for U&TWs and emphasized the importance of correctly filling out the surveys that are used to compile the data. He also presented AFOMS test development concepts for the SKT and gave an overview of how to interpret the Occupational Survey Report (OSR) provided by AFOMS.

l. Proficiency Code Use: Ms. Mary Koger, 366 TRS/TRR Chief, gave a briefing on the proper use and understanding of the proficiency codes in an effort to improve the process during the Specialty Training Standard review.

m. CFETP Part 2, Specialty Training Standard (STS) Strawman Review: SMSgt Deese briefed the participants on the schoolhouse recommended changes for the strawman STS. Changes were based on local course subject matter experts, graduate Assessment surveys, field recommendations, occupational survey report, and common sense. Constraints were briefly addressed. The participants were briefed on the implications of their final decisions and that the schoolhouse's recommendations should be used as a stepping stone to making group decisions. The participants reviewed the STS and recommendations were made. See Attachment 4 for a list of these recommendations.

n. Core Task Review: Chief Gelsleichter gave the briefing on core tasks. He gave a comprehensive definition of the qualification of a core task. He also urged the participants to look to the "essence of the career field" when selecting the core tasks. Discussion was begun at Section 9 and continued until all requirements had been reviewed and recommendations were made. The final draft was reviewed for accuracy. SMSgt Deese noted that after the core task review, there were 92 five-level core tasks and 3 seven-level core tasks. He also noted there were now 10 3c coded tasks in the apprentice course. See attachment 5 for the list of items identified as Core tasks. (Several of the 92 five-level core tasks will convert to diamond tasks once an review is conducted to determine the availability of equipment for training.)

o. Electronic 3E051 CDC Update: MSgt Kappes, 366 TRS CDC writer, gave an update on the electronic CDC initiative. Initiative has reverted to a HYBRID approach to CDCs. The 3E051 CDCs will originally come out in a paper set which will include a CD-ROM. It is not a requirement to use the CD-ROM. The paper versions will be stand-alone and will contain all information required for upgrade and promotion testing. The CD-ROM will be optional and its purpose is to enhance the paper format and the learning process. He then briefed the estimated activation date for the 3E051A CDCs.

p. 3E050 Contingency CDC Update: MSgt Red Cloud, HQ AFCESA/CEX, briefed the 3E050 CDCs. He started with the history of 3E050 CDCs and indicated that they were created to fill a training void. To fill this void, the general contingency CDCs were developed and made mandatory by tying them to upgrade training. The YOT initiative dictated that all airmen must

complete 12 hours of contingency training during tech training, and since that initiative the effectiveness of HST has increased; therefore, these CDCs were converted to an interactive QTP format (should be completed by Dec 99, fielded no later than Mar 00). The new product will provide flexibility and portability that can be used annually or whenever needed. This new product will be used to meet General Contingency CAT I training requirements only.

q. Course Training Standards (CTS) / Education and Training Course Announcement (ETCA) Review: Ms. Haris Georges, 366TRS/TRR, briefly gave information on the publication of the Education and Training Course Announcements and showed excerpts of the particular pages containing the Electrical Systems courses. The course content was extensively reviewed and recommendations were made, see Attachment 6. A motion by TSgt Kussavage, AETC, was made to develop a MTT grounding/lightning protection course. Motion by MSgt Donelly, AMC, to develop a National Electric Code MTT course. The motions were approved and action items were made for HQ AFCESA/CEOT to send a survey to all MAJCOMs to receive training requirements for these courses. The recommendations will be brought forward to the Training Committee workshop in March of 2000.

r. Apprentice Course Description Review: The ETCA apprentice course description was reviewed and recommendations were made (see attachment 6).

s. Contingency Training Brief: MSgt Dan Red Cloud briefed contingency task certification, Just in Time Training (JIT), Special Training Locations (STLs), Regional Equipment Operators Training Site, and Regional Training Sites (RTSs). He explained how these sites could possibly be used for just-in-time training to meet training requirements in support of the new EAF. Silver Flag training was then briefed by MSgt Leonard Howard, HQ AFCESA/CEX. He gave a brief description of the course changes for 2000.

7. Closing Remarks: SMSgt Deese thanked the attendees for their participation and professionalism, which made this U&TW a great success. The workshop adjourned at 1430 on 19 Nov 99.

LANCE C. BRENDEL, Colonel, USAF
Director of Operations Support

Attachments:
1. Distribution List
2. Attendees
3. Changes to AFMAN 36-2108
4. Changes to CFETP
5. Core Task Requirements
6. Supplemental Course Changes
7. Action Items
8. Overall U&TW Results

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11WG/CC

HQ AFRC/CEX

HQ AIA/CEP

366 TRS CC/TRR/TTE

ATTACHMENT 1

ELECTRICAL SYSTEMS U&TW ATTENDEES

MEMBERS

NAME	OFFICE
SMSgt Glenn Deese – Chairman	HQ AFCESA / CEOT
SSgt Chris Ford	11th WG / 11 CES/CEOUE
TSgt Yoji Endo	AIA / 301 IS/CEO
MSgt Norman Ellis	AFSOC / 16 SOW/CE
MSgt Karl Mitchell	ACC / 5 CES/CEO
SMSgt Brian Donley	AMC / 92 CES/CEOI
MSgt Timothy James	USAFE / 52 CES/CEOFE
TSgt Michael Kussavage	AETC / 82 CES
TSgt David Grigg	AFRC / 307 RHCES
SMSgt Gene Kennigseder	ANG / 188 CES, Ft. Smith, AR
MSgt Joseph Escobedo	AFMC / 72 CEG/CEZBH
SMSgt Richard Piech	PACAF / 354 CES/CEOP

OTHER ATTENDEES

CMSgt Richard Park	HQ AF / ILEM
CMSgt Mike Gelsleichter	HQ AFCESA / CEOT
CMSgt Joe B. Wallace	366 TRS / CCM / TTE
CMSgt Sue Wynn	HQ AFRC / CEXR
Mr Jim Earles	AFOMS / OMYO
MSgt Troy Taylor	HQ ANG / CEX
MSgt Mike Litke	366 TRS / TTE
Ms Haris Georges	366TRS / TRR
CMSgt Al Miller	11th WG / 11 CES/CCM
MSgt Dan Red Cloud	HQ AFCESA / CEXR
Capt Anthony Copeland	HQ AETC / DOOI
Ms. Mary Koger	366 TRS / TRR
Mr. Charles Cheatle	366 TRS / TTE
Mr. Walt Helbig	366 TRS / TTEE
Mr. Rodney Odorico	366 TRS / TTE
TSgt Henry Rak	366 TRS / TTE
TSgt Rose Williams	366 TRS / TTE
TSgt Matthew Bernhardt	366 TRS / TTE
TSgt Eric Mann	366 TRS / TTE

ATTACHMENT 2

RECOMMENDED CHANGES TO AFMAN 36-2108

Superintendent

Heading:	Delete “CEM Code 3E000”

Craftsman/Journeyman/Apprentice/Helper

Para 1.:	Delete “high and low voltage, interior and exterior”; add “above and below 600 volts” between “components” and “; airfield”
Para 2.1.:	change “de-energize” in first line to “de-energized”
Para 2.3.:	add “cardiopulmonary resuscitation,” between “in” and “first aid”; change “safety, and environmental protection procedures. Maintains proficiency in” to “and”; add “, aerial lift,” between “top” and “and”; delete “, and cardiopulmonary resuscitation and other first aid procedures”
Para 3.4.2.:	change “or” to “and” in line three; add “and components” after “systems” in line three

ATTACHMENT 3

RECOMMENDED CHANGES TO CFETP

ABBREVIATIONS/ TERMS EXPLAINED:	Replace with the definition used in AFI 36-2201
ABBREVIATIONS/ TERMS EXPLAINED:	Replaced "Aditional training" with "**Additional Training.**"; deleted "is a"
ABBREVIATIONS/ TERMS EXPLAINED:	Replaced "Upgrade training" with "**Upgrade Training.**"
Part 1, Section A, para. 1:	Replaced fourth bullet using definition from AFI 36-2201
Section B, para 4.1:	Change ", 600 volts nominal, above and below" to "(above and below 600 volts)"
Para. 4.2.1.:	First bullet delete "above and below 600 volts nominal"
Para. 4.2.3.:	Change "Maintains proficiency in first aid (including cardiopulmonary resuscitation), safety, and environmental protection procedures." to "Maintains proficiency in first aid, cardiopulmonary resuscitation (CPR), and pole top, aerial lift, and manhole rescue."; delete first bullet; make second bullet new para. 4.2.4.
Para. 4.2.4.:	Change to para. 4.2.5.
Para. 4.2.5.:	Change to para. 4.2.6.
Para 4.3.:	Change ", above and below 600 volts nominal" to "voltage"
Para. 4.3.2.:	First bullet change "" , above and below 600 volts nominal" to "voltage"
Para. 6.2.:	Change "**Five Level**" to "**Five-Level**"
Para. 6.3.:	Change "**Seven Level**" to "**Seven-Level**"; change "7-level" to "Seven-level"
Section C, Para. 10.1.1.2.:	Change "use of drawing" to "mathematics"
Para. 10.1.1.3.:	Change "002" to "005"
Para. 10.1.1.5.:	Bullet 2 change "309" to "301"

Para. 10.2.1.1.:	Add “and de-energized” after “energized”
Para. 10.2.1.3.:	Bullet one change “are” to “is”; bullets 3 & 4 place “/” between “contingency” & “war”
Para. 10.3.1.1.:	Add “and de-energized” after “energized”
Para. 10.3.1.2.:	third bullet change “AFRES” to “AFRC”
Para. 10.4.1.1.:	First bullet change “, above and below 600 volts nominal” to “voltage”
Para. 10.4.1.2.:	Change “For ANG/AFRES, completion of ECI course 00008 D&E (paper base correspondence) **or** course 00005 (computer based CD ROM)” to “Either the in-residence or correspondence course is required for ARC personnel to”
Para. 10.4.2.:	Second bullet change “base” to “based”
Part II, para. 2.5.:	Delete
Para. 2.6.:	Change to “2.5.”; Change “career development courses” to “CDCs”
Para. 2.7.:	Change to “2.6” & correct numbering for the rest of para. 2; change “on-the-job” to “OJT”
STS, 4.9.:	Delete line item
9.2.:	Add “A” to 3-level Change 5-level from to “C” to “B”
9.6.1.:	Change 3-level from “3c” to “2b”
9.6.2.:	Change 3-level from “3c” to “2b”
9.6.3.:	Change “Interpret” to “Use”; delete “when performing switching”; delete as 7-level core task; delete training codes
9.6.3.1.:	Add “9.6.3.1. When switching”; add as 7-level core task; add “2b” to 3-level; “c” to 5-level

9.6.3.2.:	Add “9.6.3.2. When blocking and tagging; add as 7-level core task; add 3–level “2b”; 5-level “c”
9.6.4.:	Delete “and interpret”; add 3-level “2b” and 5-level “c”
9.7.:	Change to “Confined space”; delete training codes
9.7.1.:	Add “9.7.1. Identify”; 3-level “A”; 5-level”B”
9.7.2.:	Add “9.7.2. Safe entry procedures”
9.7.2.1.:	Add “9.7.2.1. Test”; add 3-level “2b”; 5-level “b”
9.7.2.2.:	Add “9.7.2.2. Ventilate”; add 3-level “2b”; 5-level “b”
9.8.:	Change to “Perform rescue”; delete training codes
9.8.1.:	Add “9.8.1. Pole top”; add 3-level “2b”; 5-level “b”
9.8.2.:	Add “9.8.2. Manhole”; add 3-level “3c”; 5-level “b”
9.8.3.:	Add “9.8.3. Aerial lift”; add 3-level “3c”; 5-level “b”
9.9:	Change to “Supervisory safety”; delete training codes
9.9.1.:	Add “9.9.1. Maintenance of de-energized distribution system”
9.9.1.1.:	Add “9.9.1.1. Over 600 volts”; add 5-level “B”
9.9.1.2.:	Add “9.9.1.2. Under 600 volts”; add 5-level “B”
9.9.2.:	Add “9.9.2. Maintenance of energized distribution system”
9.9.2.1.:	Add “9.9.2.1. Over 600 volts”; add 5-level “B”
9.9.2.2.:	Add “9.9.2.2. Under 600 volts”; add 5-level “B”
9.9.3.:	Add “9.9.3. Maintenance of equipment status boards or logs”; add 5-level “B”
9.10.:	Change to “Conduct safety inspections”

9.10.1.:	Add “9.10.1. Hot line tools”; add as 5-level core task; add 3-level “b”; 5-level “c”
9.10.2.:	Add “9.10.2. Rubber personal protective equipment”; add as core task; add 3-level “2b”; 5-level from “c”
9.10.3.:	Add “9.10.3. Protective equipment”
9.10.3.1.:	Add “9.10.3.1. Rubber”; add 3-level “b”; 5-level “c”
9.10.3.2.:	Add “9.10.3.2. Polyethylene”; 3-level “b”; 5-level “c”
9.11.:	Change to “Lead based paint (LBP) hazard”; add 3-level “B”
9.12.:	Change to “Initial Federal Hazard Communication Training Program (FHCTP); ad 3-level “B”
9.12.1.:	Delete
9.12.2.:	Delete
9.13.:	Delete
11.1.:	Change “regulations” to “instructions”
11.2.1.:	Delete as 7-level core; change 5-level from “C” to “b”
11.2.2.:	Delete as core; change 5-level from “C” to “b”
11.2.3.:	Delete as core; change 5-level from “C” to “b”
11.2.4.:	Change 3-level from “A” to “b”; 5-level from “C” to “b”
11.2.5.:	Change from “Use technical publications to perform maintenance, operations, and troubleshooting” to “National Fire Alarm Code (NFPA 72)”; change 5-level from “C” to “A”
11.3.:	Add “11.3. Use technical publications to”
11.3.1.:	Add “11.3.1. Maintain”; add 3-level “a”; 5-level “b”
11.3.2.:	Add “11.3.2. Operate”; add 3-level “a”; 5-level “b”

11.3.3.:	Add “11.3.3. Troubleshoot”; add 3-level “a”; 5-level “b”
12.:	Change “laying out” to “scheduling”; add references “National Electrical Safety Code, TR: AFR 85-2; AFM 171-2”
12.1.:	Change “Read wiring diagrams, schematics, specifications, drawings, staking sheets, and one line diagram” to “Planning job requirements”; delete codes
12.1.1.:	Add “Use wiring diagrams, schematics, specifications, drawings, staking sheets, and one line diagram”; add 3-level “2b”; 5-level “C”
12.1.2.:	Add “Determine the type and size of electrical system”
12.1.2.1.:	Add “Under 600 volts”; add 3-level “A”; 5-level “C”
12.1.2.2.:	Add “Under 600 volts”; add 3-level “A”; 5-level “C”
12.5.:	Delete
12.6:	Delete
13.1.:	Delete as core task
13.2.:	Delete proficiency codes
13.2.1.:	Add “DC circuits”; add 3-level “A”; 5-level “C”
13.2.2.:	Add “AC circuits”; add 3-level “B”; 5-level “C”
13.3.:	Delete as core task; change 5-level from “c” to “b”
13.4.:	Change 5-level from “c” to “b”
13.5.:	Delete as core task; change 5-level from “c” to “b”
13.8.:	Change from “Electrical systems from primary to load” to “Fundamentals of electrical systems from primary generation to load”
14.1.:	Change 3-level from “B” to “A”; 5-level from “C” to “B”
14.2.:	Change 5-level from “C” to “B”

14.3.:	Change “Understanding” to “Principals of”
15.1.:	Delete “of substation equipment”; delete proficiency codes
15.1.1.:	Add “Reclosure”; add 3-level “A”; 5-level “B”
15.1.2.:	Add “Circuit breakers”; add 3-level “A”; 5-level “B”
15.1.3.:	Add “Potential transformers”; 3-level “A”; 5-level “B”
15.1.4.:	Add “Current transformers”; 3-level “A”; 5-level “B”
15.1.5.:	Add “Protective relays”; add 3-level “A”; 5-level “B”
15.1.6.:	Add “Voltage regulators”; add 3-level “A”; 5-level “B”
15.1.7.:	Add “Insulating mediums”
15.1.7.1.:	Add “Air”; 3-level “A”; 5-level “B”
15.1.7.2.:	Add “Oil”; 3-level “A”; 5-level “B”
15.1.7.3.:	Add “Vacuum”; 3-level “A”; 5-level “B”
15.1.7.4.:	Add “Gas”; 3-level “A”; 5-level “B”
15.1.8.:	Add “Capacitor banks”; 5-level “b”
15.2.1.:	Change “reclosure” to “Potential transformers”; add 3-level “a”; change 5-level from “A” to “b”
15.2.2.:	Change “Circuit breakers” to “Current transformers”; add 3-level “a”; change 5-level from “A” to “b”
16.1.1.:	Change 3-level from “3c” to “2b”; add 5-level “b”
16.1.2.:	Add 5-level “b”
16.1.3.:	Add 5-level “b”
16.2.:	Change to “Handle poles”
16.2.1.:	Add “16.2.1. Load/unload poles”; add 3-level “2b”; 5-level “b”

16.2.2.:	Add “16.2.2. Transport poles”; add 3-level “a”; 5-level “b”
16.2.3.:	Add “16.2.3. Frame poles”; add 3-level “2b”; 5-level “b”
16.2.4.:	Add “16.2.4. Set utility poles”; add as core task; add 3-level “2b”; 5-level “b”
16.3.:	Change to “Install”
16.3.1.:	Change to “Guys”; change 5-level from “B” to “b”
16.3.2.:	Change to “Overhead line conductors”; add as core task; change 3- level from “a” to “2b”; 5-level from “B” to “b”
16.3.3.:	Change to “Anchors”; change 3- level from “2b” to “a”; 5-level from “B” to “b”
16.3.4.:	Change to “Pole equipment”; delete as core task; delete training codes
16.3.4.1.:	Add “16.3.4.1. Conductor support devices”; add as core task; add 3-level “2b”; 5-level “b”
16.3.4.2.:	Add “16.3.4.2. Transformers”; add as core task; add 3-level “2b”; 5-level “b”
16.3.4.3.:	Add “16.3.4.3. Protective devices”; add as core task; add 3-level “2b”; 5-level “b”
16.3.5.:	Add “16.3.5. High voltage switches”; add 3-level “a”; 5-level “B”
16.3.6.:	Add “16.3.6. Service drops”; add as core task; add 3-level “2b”; 5-level “b”
16.3.7.:	Add “16.3.7. Armor rod”; add 3-level “b”; 5-level “B”
16.3.8.:	Add “16.3.8. Grounding set”; add as core task; add 3-level “2b”; 5-level “b”
16.4.:	Change to “Inspect poles and installed equipment”; add as core task; add 3-level “1a”; 5-level “b”
16.4.1. – 16.4.10.:	Delete

16.5.:	Change to “Perform di-electric test of oil”; delete as core task; change 3-level from “1a” to “a”
16.6.:	Change to “Perform recurring maintenance on overhead distribution equipment”
16.7.:	Change to “Isolate system faults”; change 3-leve from “a” to “1b”
16.8.:	Change to “Splice de-energized overhead conductor”
16.9.:	Change to “Splice energized overhead conductor”; delete 3-level code
16.10.:	Change to “Replace conductor support on energized conductors”
16.11.:	Change to “Replace conductor support on de-energized conductors”; add 3-level “2b”; delete 5-level code
16.12.:	Change to “Transfer de-energized conductors from old pole to new pole”; change 3-level from “2b” to “b”; add 5-level “B”
16.13.:	Delete “de-“; delete 3-level code
16.14.:	Change to “Perform transformer connections”; add as core task; add 3-level “2b”; change 5-level from “B” to “c”
16.15.:	Change “Recover equipment”; delete as core task; delete 5-level code
16.16.:	Change to “Plan distribution systems”
16.17.:	Change to “Construct distribution systems”; delete 3-level code; add 5-level code “B”
16.18.:	Delete
16.19.:	Delete
17.1.1.:	Change 5-level from “B” to “b”
17.1.2.:	Change 3-level from “2b” to “1b”

17.1.3.1.:	Add “On” before “pads”; change 5-level from “B” to “b”
17.1.3.2.:	Add “In” before “vaults”; change 5-level from “c” to “b”
17.1.3.3.:	Change from “17.1.3.3.” to “17.1.4.”; add 5-level “b”
17.2.:	Change 5-level from “c” to “b”
17.3.1.:	Change 5-level from “c” to “b”
17.4.:	Change 3-level from “2b” to “b”; 5-level from “c” to “b”
17.5.1.:	Change 5-level from “c” to “b”
17.5.2.:	Change 5-level from “c” to “b”
17.6.:	Change “Electrically” to “Perform high potential DC”; add “on” after “test”; change 3-level from “2b” to “1b”; 5-level from “c” to “b”
17.7.:	Delete “system”; change 5-level from “B” to “b”
17.8.	Change 5-level from “B” to “b”
17.10.:	Change 5-level from “B” to “b”
17.11.:	Change to “Plan distribution systems”; change 5-level from “A” to “B”
17.12.:	Change to “Construct distribution systems”; add 3-level “2b”
17.13.:	Delete
18.1.1.:	Delete “entrance”; delete as core item; delete 3 & 5 level codes
18.1.1.1.:	Add “18.1.1.1. Service drop”; add 3-level “2b”; 5-level “b”
18.1.1.2.:	Add “18.1.1.2. Service lateral”; add 3-level “2b”; 5-level “b”
18.1.2.:	Delete as core task; delete 3 & 5 level codes

18.1.2.1.:	Add “18.1.2.1. Service meter”; add 3-level “2b”; 5-level “b”
18.1.2.2.:	Add “18.1.2.2. Service disconnect”; add 3-level “2b”; 5-level “b”
18.1.3.:	Change to “Grounding”; delete as core task; delete 3 & 5 level codes
18.1.3.1.:	Add “18.1.3.1 System”; add as core task; add 3-level “2b”; 5-level “b”
18.1.3.2.:	Add “18.1.3.2 Equipment”; add as core task; add 3-level “2b”; 5-level “b”
18.1.3.3.:	Add “18.1.3.3 Bonding”; add as core task; add 3-level “2b”; 5-level “b”
18.1.4.:	Change 5-level from “B” to “b”
18.1.5.:	Delete “and protective devices”; delete as core task; change 3-level from “3c” to “2b”; 5-level from “B” to “b”
18.1.6.:	Change 3-level from “3c” to “2b”; 5-level from “B” to “b”
18.1.7.1.:	Change 3-level from “3c” to “2b”
18.1.7.2.:	Change 3-level from “3c” to “2b”
18.1.7.3.:	Delete task
18.1.8.:	Change to “Fault protection”; delete 3 & 5 level codes
18.1.8.1.:	Add “Ground fault circuit interrupter (GFCI)”
18.1.8.1.1.:	Add “18.1.8.1.1 Receptacle”; add 3-level “2b”; 5-level “B”
18.1.8.1.2.:	Add “18.1.8.1.2 Breaker”; add 3-level “2b”; 5-level “B”
18.1.8.2.:	Add “18.1.8.2 Arc fault circuit interrupter (AFCI)”; add 3-level “1a”; 5-level “A”
18.1.9.:	Change to “Wiring Methods”

18.1.9.3.:	Delete as core task; delete 3 & 5 codes
18.1.9.3.1.:	Add “Rigid Metal”; add 3-level “2b”; 5-level “b”
18.1.9.3.2.:	Add “Electrical metal tubing (EMT)”; add 3-level “2b”; 5-level “b”
18.1.9.3.3.:	Add “Flexible metal”; add 3-level “2b”; 5-level “b”
18.1.10.:	Change 3-level from “2b” to “1b”; 5-level from “c” to “b”
18.1.11.:	Add “Dry” before “Transformers”
18.1.12.:	Add “18.1.12. Overcurrent protection devices”; make core task; add 3-level “2b”; 5-level “b”
18.1.13.:	Add “18.1.13. Lighting fixtures”
18.1.13.1.:	Add “18.1.13.1. Incandescent”; add 3-level “2b”; 5-level “B”
18.1.13.2.:	Add “18.1.13.2. Fluorescent”; add 3-level “2b”; 5-level “B”
18.2.:	Delete “Maintain”; delete 3 & 5 level codes
18.2.1.:	Add “18.2.1. Maintain”; add 3-level “b”; 5-level “b”
18.2.2.:	Add “18.64.2. Troubleshoot”; add as core task; add 3-level “2b”; 5-level “b”
18.3.:	Change to “Read service meters”; delete as core task; change 5-level from “C” to “B”
18.5.:	Delete “Maintain”; change “electric” to “electrical”; delete 3 & 5 level codes
18.5.1.:	Add “18.5.1. Maintain”; add 3-level “b”; 5-level “b”
18.5.2.:	Add “18.5.2. Troubleshoot”; add 3-level “1b”; 5-level “b”
18.6.:	Change to “Select material requirements for distribution systems”; change 3-level from “1b” to “2b”; 5-level from “c” to “B”

18.7.—18.9.:	Delete
19.2.:	Change “Install” to “Replace”
19.2.1.:	Change 3-level from “3c” to “2b”; 5-level from “c” to “b”
19.2.2.:	Change 3-level from “a” to “1a”; 5-level from “c” to “b”
19.2.3.:	Change 5-level from “B” to “b”
19.2.3.:	Add “19.2.3. Airfield fixture lamps”; make core task; add 3-level “3c”; 5-level “b”
19.2.4.:	Add “19.2.4. Isolating (IL) transformers”; make core task; add 3-level “3c”; 5-level “b”
19.2.5.:	Add “19.2.5. Isolating (IL) transformers”; add as core task; add 3-level “3c”; 5-level “b”
19.3.:	Change to “Maintain airfield lighting systems”; delete 3 & 5 level codes
19.3.1.:	Add “19.3.1. Constant current regulator”; make core task; add 3-level code “2b”; 5-level “b”
19.3.2.:	Add “19.3.2. Control components”; make core task; add 3-level code “1a”; 5-level code “b”
19.3.3.:	Add “19.3.3. Counterpoise components”; add 3-level “1a”; 5-level “b”
19.3.4.:	Add “19.3.4. Fixtures”; make core task; add 3-level “2b”; 5-level “b”
19.3.5.:	Add “19.3.5. Airport beacons and obstruction light”; add 3-level “1a”; 5-level “b”
19.3.6.:	Add “19.3.6. Obstruction light”; add 3-level “1a”; 5-level “b”
19.3.7.:	Add “19.3.7. Condenser discharge light unit”; add 3-level “1a”; 5-level “b”
19.3.8.:	Add “19.3.8. Master sequence control timer unit”; add 5-level “B”

19.3.9.:	Add “19.3.9. Approach lights”; add 3-level “a”; 5-level “b”
19.3.10.:	Add “19.3.10. Approach path indicators”; make core task; add 3-level “a”; 5-level “b”
19.4.:	Change to “Isolate airfield lighting circuits or equipment for test”; make core task; add 3-level “2b”; 5-level “b”
19.4.1. – 19.4.9.:	Delete (moved to 9.3.)
19.5.:	Change to “Test airfield lighting cable”; delete as core; change 5-level from “B” to “b”
19.6.:	Change to “Inspect”; drop 3 and 5-level codes
19.6.1.:	Add “19.6.1. Inspect Airfield beacon”; add 3-level “B”; 5-level “b”
19.6.2.:	Add “19.6.2. Obstruction lights”; add 3-level “B”; 5-level “b”
19.7.:	Change to “Connect airfield lighting constant current regulator for emergency operation”; add as core task; change 3-level from “a” to “2b”; 5-level from “B” to “c”
19.8.:	Change to “Troubleshoot”; delete 3 & 5 level codes
19.8.1.:	Add “19.8.1. Airfield lighting circuits”; add as core task; add 3-level code “2b”; 5-level “b”
19.8.2.:	Add “19.8.2. Airfield lighting control circuits”; add 3-level code “2b”; 5-level “b”
19.8.3.:	Add “19.8.3. Condenser discharge light unit”; add 3-level “1a”; 5-level “b”
19.9.:	Change to “Repair airfield lighting cable”; delete as core task; delete 3 & 5 level codes
19.9.1.:	Add “19.9.1 Use connector splice kit”; add as core task; add 3-level “3c”; 5-level “c”

19.9.2.:	Add “19.9.2 Use resin splice kit”; add 3-level “2b”; 5-level “c”
19.10. – 19.12:	delete
20.1.1.:	Change to “High intensity discharge (HID) light fixtures”
20.1.2.:	Change to “Quartz fixtures”
21.1.:	Change 5-level from “B” to “b”
21.2.:	Change 5-level from “B” to “b”
21.3.:	Change to “Maintain”; delete training codes
21.3.1.:	Add “21.3.1. Motors”; add 3-level “b”; 5-level “b”
21.3.2.:	Add “21.3.2. Motors”; add 3-level “b”; 5-level “b”
21.4.:	Change 5-level from “C” to “b”
21.5.1.:	Change 5-level from “B” to “b”
21.5.2.1. – 21.5.2.3.:	Change 5-level from “B” to “b”
21.5.2.4.:	Add “21.5.2.4. Solid state”; add 3-level “a”; 5-level “b”
21.5.3.:	Change 5-level from “B” to “b”
21.5.4.:	Change to “Frequency drive”
22.1.5.:	Add “22.1.5. Computer grounds”; add 3-level “A”; 5-level “B”
22.2.1.:	Change 3-level from “b” to “1b”
22.2.4.:	Add “22.1.5. Computer grounds”; add 5-level “b”
22.3.1.:	Delete as core task; change 5-level from “c” to “b”
22.3.2.:	Delete as core task; change 5-level from “B” to “b”
22.3.3.:	Change 5-level from “B” to “b”
22.4.1.:	Delete as core task

22.4.4.:	Add “22.4.4. Computer grounds”; add 5-level “B”
22.5.1. – 22.5.3.:	Change 5-level from “B” to “b”
22.5.4.:	Add “22.5.4 Lightning protection”; add 5-level “b”
23.1.:	Change to “Principles”
23.1.1. – 23.1.2.:	Add 3-level “A”
23.1.3.:	Change 3-level from “2b” to “A”
23.1.4.:	Add 3-level “A”; change 5-level from “c” to “B”
23.1.5.1. – 23.1.5.2.:	Change 3-level from “b” to “A”
23.1.6.:	Change 3-level from “a” to “A”
23.1.7.:	Add “23.1.7. Traffic control systems”; add 3-level “A”; 5-level “B”
23.1.8.:	Add “23.1.8. Base warning system”; add 3-level “A”; 5-level “B”
23.2.2.:	Change “alarm” to “detection”
23.3.2.:	Change “alarm” to “detection”
23.3.5.1. – 23.3.5.2.:	Delete 3-level code
24.1.1.:	Change from 7-level to 5-level core task; change 5-level from “B” to “c”
24.1.2.:	Change to “Rubber Personal Protective equipment”; change from 7-level to 5-level core task; change 5-level from “B” to “c”
24.1.3.:	Change to “Protective equipment”; delete training code
24.1.3.1.:	Add “24.1.3.1. Rubber”; add 3-level “b”; 5-level “c”
24.1.3.2.:	Add “24.1.3.2. Polyethelene”; add 3-level “b”; 5-level “c”
24.1.4.:	Change to “Pole Trailer”

24.1.5.:	Change to “Reel jacks”
24.1.6.:	Change to “Cable pulling guide”; delete 3-level code
24.1.7.:	Change to “Handline”; delete as core task; change 3-level from “3c” to “a”
24.1.8.:	Add “24.1.8. Block and tackle”; add 3-level “a”; 5-level “B”
24.1.9.:	Add “24.1.9. Chain hoist”; add 3-level “a”; 5-level “B”
24.1.10.:	Add “24.1.10. Climbing equipment”; add as core task; add 3-level “2b”; 5-level “B”
24.2.:	Delete as core; change 3-level from “3c” to “2b”
24.3.:	Delete as core; change 3-level from “3c” to “2b”
24.4.:	Change to “Test hot line tools”
24.5.10.:	Add 3-level “1a”
24.5.16.:	Delete as core task
24.5.17.:	Change “volt” to “voltage”
24.5.19.:	Change to “High potential DC tester”; change 5-level from “B” to “b”
24.6. – 24.11.:	Change 5-level from “B” to “b”
24.12.:	Change to “Use conduit benders”; delete as core task; delete 3 & 5 level codes
24.12.1.:	Add “24.12.1. Manual”; add 3-level “2b”; 5-level “b”
24.12.2.:	Add “24.12.2. Hydraulic”; add 3-level “2b”; 5-level “b”
24.12.3.:	Add “24.12.3. Electric”; add 3-level “2b”; 5-level “b”
24.13.:	Change to “Use manual conduit threaders”; change 5-level from “B” to “b”

24.14.:	Change to “Use power conduit threaders”; delete as core task
24.15.:	Change to “Use soldering equipment”; delete 5-level code
24.16.:	Change to “Use hydraulic knockout”; add 5-level code “B”
24.17.:	Delete task
26.1.:	Change to “Airfield support systems”
26.1.1.:	Change to “Mobile Aircraft Arresting System (MAAS)”
26.1.1.1.1.:	Change to “26.1.1.1. Install”; change 3-level from “A” to “a”; 5-level from “B” to “b”
26.1.1.1.2.:	Change to “26.1.1.2. Maintain”; change 3-level from “A” to “a”; 5-level from “B” to “b”
26.1.1.2.:	Change to “26.1.2. Emergency Airfield Lighting System (EALS)”
26.1.1.2.1.:	Change to “26.1.2.1. Install”; delete as diamond task; delete 3 & 5 level codes
26.1.2.1.1.:	Add “26.1.2.1.1. Approach”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.2.:	Add “26.1.2.1.2. Runway”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.3.:	Add “26.1.2.1.3. PAPI”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.4.:	Add “26.1.2.1.4. Taxiway”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.5.:	Add “26.1.2.1.5. Distance to go (DTG); add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.6.:	Add “26.1.2.1.6. Regulator”; add as diamond task; add 3-level “2b”; 5-level “B”

26.1.2.1.7.:	Add “26.1.2.1.7. Generator”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.1.8.:	Add “26.1.2.1.8. Obstruction lights”; add 3-level “2b”; 5-level “B”
26.1.1.2.2.:	Change to “26.1.2.2. Operate”; delete as diamond task; delete 3 & 5 level codes
26.1.2.2.1.:	Add “26.1.2.2.1. Regulator”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.2.2.:	Add “26.1.2.2.2. Generator”; add as diamond task; add 3-level “2b”; 5-level “B”
26.1.2.2.3.:	Add “26.1.2.2.3. Obstruction lights”; add 3-level “2b”; 5-level “B”
26.1.1.2.3.:	Change to “26.1.2.3. Maintain”; delete as diamond task; delete 3 & 5 level codes
26.1.2.3.1.:	Add “26.1.2.3.1. Approach”; add 3-level “2b”; 5-level “B”
26.1.2.3.2.:	Add “26.1.2.3.2. Runway”; add 3-level “2b”; 5-level “B”
26.1.2.3.3.:	Add “26.1.2.3.3. PAPI”; add 3-level “2b”; 5-level “B”
26.1.2.3.4.:	Add “26.1.2.3.4. Taxiway”; add 3-level “2b”; 5-level “B”
26.1.2.3.5.:	Add “26.1.2.3.5. Distance to go (DTG)”; add 3-level “2b”; 5-level “B”
26.1.2.3.6.:	Add “26.1.2.3.6. Regulator”; add 3-level “2b”; 5-level “B”
26.1.2.3.7.:	Add “26.1.2.3.7. Generator”; add 3-level “2b”; 5-level “B”
26.1.2.3.8.:	Add “26.1.2.3.8. Obstruction lights”; add 3-level “2b”; 5-level “B”
26.1.1.3.:	Change to “26.1.2.4. Navigational Aids (NAVAIDS)”

26.1.1.3.1.:	Change to “26.1.2.4.1. Electrical service”; change 5-level from “B” to “b”
26.1.1.3.2.:	Change to “26.1.2.4.2. Grounds”; change 5-level from “B” to “b”
26.1.2. – 26.1.2.2.:	Delete tasks
26.2.1.1.1.:	Change to “Install”; delete as core task; change 3-level from “3c” to “b”; 5-level from “B” to “b”
26.2.1.1.2.:	Change to “Remove”; delete as core task; change 3-level from “3c” to “b”; 5-level from “B” to “b”
26.2.1.2.1.:	Change to “Install”; change 3-level from “3c” to “b”; 5-level from “B” to “b”
26.2.1.2.2.:	Change to “Maintain”; change 3-level from “2b” to “b”; 5-level from “B” to “b”
26.2.1.2.3.:	Change to “Troubleshoot”; change 3-level from “2b” to “b”; 5-level from “B” to “b”
26.2.1.3. – 26.2.1.4.3:	Delete tasks
26.2.2.1.1.:	Change to “Install”; change 3-level from “3c” to “2b”; 5-level from “B” to “b”
26.2.2.1.2.:	Change to “Operate”; change 3-level from “3c” to “2b”; 5-level from “B” to “b”
26.2.2.1.3.:	Change to “Maintain”; change 3-level from “3c” to “c”; 5-level from “B” to “b”
26.2.2.2.1.:	Change to “Install”; change 3-level from “A” to “a”; 5-level from “B” to “b”
26.2.2.2.2.:	Change to “Operate”; change 3-level from “A” to “a”; 5-level from “B” to “b”
26.2.2.2.3.:	Change to “Maintain”
26.2.2.3.1.:	Change to “Install power supply”; delete as diamond task; change 5-level from “B” to “b”

26.2.2.3.2.:	Change to “Maintain”
26.2.2.4.1.:	Change to “Install power supply”; change 3-level from “2b” to “1b”; 5-level from “B” to “b”
26.2.2.4.2.:	Change to “Maintain electrical systems”; delete as diamond task; change 3-level from “2b” to “b”; 5-level from “B” to “b”
26.2.2.5.:	Change to “Reverse osmosis water purification unit (ROWPU) electrical system”; delete 3 & 5 level codes
26.2.2.5.1.:	Add “26.2.2.5.1. Install”; add 3-level “b”; 5-level “b”
26.2.2.5.2.:	Add “26.2.2.5.2. Troubleshoot”; add 3-level “A”; 5-level “B”
26.2.2.6.1.:	Delete as diamond task; delete 3 & 5 level codes
26.2.2.6.1.1.:	Add “26.2.2.6.1.1. Install”
26.2.2.6.1.1.1.:	Add “26.2.2.6.1.1.1. Power source”; add 3-level “A”; 5-level “B”
26.2.2.6.1.1.2.:	Add “26.2.2.6.1.1.2. Primary distribution center (PDC)”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.1.3.:	Add “26.2.2.6.1.1.3. Secondary distribution center (SDC)”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.1.4.:	Add “26.2.2.6.1.1.4. High voltage cable”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.2.:	Add “26.2.2.6.1.2. Operate”
26.2.2.6.1.2.1.:	Add “26.2.2.6.1.2.1. Power source”; add 3-level “A”; 5-level “B”
26.2.2.6.1.2.2.:	Add “26.2.2.6.1.2.2. PDC”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.2.3.:	Add “26.2.2.6.1.2.3. SDC-HV section”; add as diamond task; add 3-level “2b”; 5-level “b”

26.2.2.6.1.3.:	Add “26.2.2.6.1.3. Maintain”
26.2.2.6.1.3.1.:	Add “26.2.2.6.1.3.1. PDC”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.3.2.:	Add “26.2.2.6.1.3.2. SDC-HV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.4.:	Add “26.2.2.6.1.4. Troubleshoot”
26.2.2.6.1.4.1.:	Add “26.2.2.6.1.4.1. PDC”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.4.2.:	Add “26.2.2.6.1.4.2. SDC-HV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.1.4.3.:	Add “26.2.2.6.1.4.3. HV cable”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.:	Delete as diamond task; delete 3 & 5 level codes
26.2.2.6.2.1.:	Add “26.2.2.6.2.1. Install”
26.2.2.6.2.1.1.:	Add “26.2.2.6.2.1.1. Power source”; add 3-level “A”; 5-level “B”
26.2.2.6.2.1.2.:	Add “26.2.2.6.2.1.2. SDC-LV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.1.3.:	Add “26.2.2.6.2.1.3. Power distribution pedestal (PDP); add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.1.4.:	Add “26.2.2.6.2.1.4. LV cables”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.2.:	Add “26.2.2.6.2.2. Operate”
26.2.2.6.2.2.1.:	Add “26.2.2.6.2.2.1. Power source”; add 3-level “A”; 5-level “B”
26.2.2.6.2.2.2.:	Add “26.2.2.6.2.2.2. SDC-LV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.2.3.:	Add “26.2.2.6.2.2.3. PDP”; add as diamond task; add 3-level “2b”; 5-level “b”

26.2.2.6.2.3.:	Add “26.2.2.6.2.3. Maintain”
26.2.2.6.2.3.1.:	Add “26.2.2.6.2.3.1. SDC-LV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.3.2.:	Add “26.2.2.6.2.3.2. PDP”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.4.:	Add “26.2.2.6.2.4. Troubleshoot”
26.2.2.6.2.4.1.:	Add “26.2.2.6.2.4.1. SDC-LV section”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.4.2.:	Add “26.2.2.6.2.4.2. PDP”; add as diamond task; add 3-level “2b”; 5-level “b”
26.2.2.6.2.4.3.:	Add “26.2.2.6.2.4.3. LV cables”; add as diamond task; add 3-level “2b”
26.2.2.6.3.:	Change 5-level from “B” to “b”
26.2.2.6.4.:	Delete task
26.2.2.7.1.:	Change to “Assemble”; change 3-level from “A” to “1b”; 5-level from “B” to “b”
26.2.2.7.2.:	Change to “Disassemble”; change 3-level from “A” to “1b”; 5-level from “B” to “b”
26.2.2.7.3.:	Delete as core task; change 3-level from “3c” to “2b”; 5-level from “B” to “b”
26.2.3.:	Change to “Electrical support”; delete as diamond task; delete 3 & 5 level codes
26.2.3.1.:	Add “26.2.3.1. Facility repair”
26.2.3.1.1.:	Add “26.2.3.1.1. Electrical systems expedient repair”; add 3-level “B”; 5-level “B”
26.2.3.1.2.:	Add “26.2.3.1.2. Expedient generator installation”; add as core task; add 3-level “b”; 5-level “b”

26.2.3.2.:	Add “26.2.3.2. Medical facilities”; add 3-level “2b”; 5-level “b”
26.2.3.3.:	Add “26.2.3.3. Chemically hardened air management plant (CHAMP)”; add 3-level “A”; 5-level “A”
26.2.3.4.:	Add “26.2.3.4. Secondary Distribution Center (-50); add 3-level “A”; 5-level “A”
26.2.3.5.:	Add “26.2.3.5. Small Shelter System (SSS)”; add 3-level “A”; 5-level “A”
26.2.3.6.:	Add “26.2.3.6. Medium Shelter System (MSS)”; add 3-level “A”; 5-level “A”
26.2.3.7.:	Add “26.2.3.7. Deployable Power Generation and Distribution System (DPGDS)”; add 3-level “A”; 5-level “A”
26.3.1.:	Change to “Dump truck”
26.3.2.:	Change to “Front-end loader/forklift (AT and RT)”
26.3.3.:	Change to “Tractor mounted backhoe”
26.3.4.:	Change to “Trencher”
26.3.5.:	Change to “Electrical line truck”
26.3.6.:	Change to “HMMWV”
26.3.7. - 26.3.10.:	Delete tasks

ATTACHMENT 4

CORE Tasks

5-level

9.11.1. (Conduct safety inspections) Hot line tools
9.11.2. (Conduct safety inspections) Rubber personal protective equipment
13.4. Compute for voltage, current, resistance, and power
16.1.1. (Climb poles) Using gaffs
16.1.2. (Climb poles) Working on pole components
16.1.3. (Climb poles) Traversing obstacles
16.2.4. Set utility poles
16.3.2. (Install) Overhead line conductors
16.3.4.1. (Install pole equipment) Conductor support devices
16.3.4.2. (Install pole equipment) Transformers
16.3.4.3. (Install pole equipment) Protective devices
16.3.6. (Install) Service drops
16.3.8. (Install) Grounding set
16.4. Inspect poles and installed equipment
16.14. Perform transformer connections
17.1.1. (Install) Direct burial cable
17.1.3.1. (Install transformers) On pads
17.1.4. (Install) Grounding set
17.3.1. (Splice high voltage underground cable) Using tape
17.4. Terminate high voltage underground cable
17.7. Troubleshoot underground cables for faults
17.8. Trace underground cables with cable test set
17.10. Fabricate load break elbow
18.1.3.1. (Install grounding) System
18.1.3.2. (Install grounding) Equipment
18.1.3.3. (Install grounding) Bonding
18.1.5. (Install) Feeders
18.1.6. (Install) Overcurrent protection devices
18.1.7. (Install) Branch circuits
18.3. Troubleshoot distribution systems
19.2.1. (Replace) Airfield lighting systems components
19.2.4. (Replace) Airfield fixture lamps
19.2.5. (Replace) Isolating (IL) transfromers
19.3.1. (Maintain airfield lighting systems) Constant current regulator
19.3.2. (Maintain airfield lighting systems) Control components
19.3.4. (Maintain airfield lighting systems) Fixtures
19.3.10. (Maintain airfield lighting systems) Approach path indicators
19.4. Isolate airfield lighting components
19.7. Connect airfield lighting constant current regulator for emergency operation

19.8.1. (Troubleshoot) Airfield lighting circuits
19.9.1. (Repair airfield lighting cable) Use connector splice kit
21.1. Install motors
21.2. Install motor control circuits
24.1.1. (Maintain) Hot line tools
24.1.2. (Maintain) Rubber personal protective equipment
24.1.10. (Maintain) Climbing equipment
24.5.1. (Use test equipment) Multimeter
24.5.2. (Use test equipment) Clamp-on ammeter
24.5.3. (Use test equipment) Phase rotation meter
24.5.4. (Use test equipment) Megohmmeter
24.5.14. (Use test equipment) High voltage phase tester
24.6. Perform operator's maintenance on aerial lift truck with insulated bucket
24.7. Perform operator's maintenance on line maintenance truck
24.8. Operate aerial lift truck controls
24.9. Operate line maintenance truck controls
26.2.3.1.2. (Facility Repair) Expedient generator installation

7-level

9.6.3.1. (Use AF Form 269) When switching
9.6.3.2. (Use AF Form 269) When blocking and tagging
9.7. Plan safe clearance
17.6. Perform high potential DC test on underground cable

Diamond tasks

26.1.2.1.1. (EALS, install) Approach
26.1.2.1.2. (EALS, install) Runway
26.1.2.1.3. (EALS, install) PAPI
26.1.2.1.4. (EALS, install) Taxiway
26.1.2.1.5. (EALS, install) Distance to go (DTG)
26.1.2.1.6. (EALS, install) Regulator
26.1.2.1.7. (EALS, install) Generator
26.1.2.2.1. (EALS, operate) Regulator
26.1.2.2.2. (EALS, operate) Generator
26.2.1.2.1. (HE electrical distribution system) Install
26.2.1.2.2. (HE electrical distribution system) Maintain
26.2.1.2.3. (HE electrical distribution system) Toublshoot
26.2.2.1.1. (HF RALS system) Install
26.2.2.1.2. (HF RALS system) Operate
26.2.2.1.3. (HF RALS system) Maintain
26.2.2.4.1. (HF/HE kitchen equipment) Install power supply

26.2.2.6.1.1.2. (HF primary electrical distribution system, install) PDC
26.2.2.6.1.1.3. (HF primary electrical distribution system, install) SDC
26.2.2.6.1.1.4. (HF primary electrical distribution system, install) High voltage cable
26.2.2.6.1.2.2. (HF primary electrical distribution system, operate) PDC
26.2.2.6.1.2.3. (HF primary electrical distribution system, operate) SDC-HV section
26.2.2.6.1.3.1. (HF primary electrical distribution system, maintain) PDC
26.2.2.6.1.3.2. (HF primary electrical distribution system, maintain) SDC-HV section
26.2.2.6.1.4.1. (HF primary electrical distribution system, troublshoot) PDC
26.2.2.6.1.4.2. (HF primary electrical distribution system, troublshoot) SDC-HV section
26.2.2.6.1.4.3. (HF primary electrical distribution system, troublshoot) HV cable
26.2.2.6.2.1.2. (HF secondary electrical distribution system, install) SDC-LV section
26.2.2.6.2.1.3. (HF secondary electrical distribution system, install) PDP
26.2.2.6.2.1.4. (HF secondary electrical distribution system, install) LV cables
26.2.2.6.2.2.2. (HF secondary electrical distribution system, operate) SDC-LV section
26.2.2.6.2.2.3. (HF secondary electrical distribution system, operate) PDP
26.2.2.6.2.3.1. (HF secondary electrical distribution system, maintain) SDC-LV section
26.2.2.6.2.3.2. (HF secondary electrical distribution system, maintain) PDP
26.2.2.6.2.4.1. (HF secondary electrical distribution system, troubleshoot) SDC-LV section
26.2.2.6.2.4.2. (HF secondary electrical distribution system, troubleshoot) PDP
26.2.2.6.2.4.3. (HF secondary electrical distribution system, troubleshoot) LV cables
26.2.2.6.3. (HF electrical distribution system) Grounding

ATTACHMENT 5

CTS/ETCA Changes

J3AZR3E071 102-Bare Base Electrical Systems

CTS
Block 4a Add: (1) Purpose, PCK: B

ETCA
J3AZR3E071 102 - Bare Base Electrical Systems - PDS Code WA3 - Sheppard/3 wk - .
Provides training in the knowledge and skills needed to maintain and repair Bare Base electrical distribution systems. The scope of training includes the Bare Base primary distribution systems, components, and secondary electrical systems. Training will encompass all electrical systems in laundry units, Remote Area Lighting System (RALS), Reverse Osmosis Water Purification Unit (ROWPU), and Harvest Falcon/Harvest Eagle kitchens.

Prerequisites: AFSCs 3E051.

Uniform Requirements: Battle dress uniform (BDU) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 001- CE Electrical Equipment Troubleshooting
CTS
Item 4 Add "Identify Characteristics of Harmonics" PCK "B"

Item 9b Change PCK from "b" to "a"

Item 10 b 1, 2, & 3 Change PCK from "b" to "2b"

ETCA
J3AZR3E051 001 - C.E. Electrical Equipment Troubleshooting - PDS Code 9JF - DOD 720 - Sheppard/4 wk/MASL D148185 -

Provides formal training in the knowledge and skills needed to perform advanced electrical troubleshooting on motors, motor controls, motor control centers, electric door openers, electric hoists, transformers, grounding systems, and low voltage power circuit breakers.

Prerequisites: AFSCs 3E051, or civilian equivalent. Graduates of course J3AZR54270 001 should not attend this course. ECL 70.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 003 CATHODIC PROTECTION MAINTENANCE
CTS
No changes

ETCA
J3AZR3E051 003 - Cathodic Protection Maintenance - PDS Code 2TE - DOD 721 - Sheppard/2 week.

Provides training in the knowledge and skills necessary to test, inspect, and maintain cathodic protection systems. The scope of training includes theory of corrosion, types and methods used to protect structures from corrosion, repair of protective coatings, splicing underground cable, interpretation of blueprints, purpose and use of field test equipment, and practical experience in the operation, inspection, and adjustment of galvanic and impressed current system components.

Prerequisites: AFSCs 3E051, or civilian equivalent.. ECL 70.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E071 000 FIRE ALARM SYSTEMS MAINTENANCE
CTS
No changes

ETCA
J3AZR3E051 000 - Fire Alarm Systems - PDS Code (will change)- DOD 721 - Sheppard/3 wk 3 days.

This course provides training in the knowledge and skills necessary to test, inspect, and maintain fire alarm and suppression systems. The scope of training includes principles of fire alarm and suppression systems, inspection and operational check procedures, electronic fundamentals, interface and development of system checklist. Safety in the operation and maintenance of alarm and suppression systems is emphasized. Practical experience in connecting, testing, troubleshooting, and repairing the electrical/electronic portions of representative fire detection, alarm, and suppression systems provided.

Prerequisites: AFSCs 3E051 or civilian equivalent.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 008--High Voltage Systems Maintenance
CTS

Add item 1h. Perform dielectric tests on an insulated aerial bucket truck, PCK 2b

Add item 2j. Perform isolation procedures of underground high voltage distribution cable and equipment, PCK 2b

Delete item 2k. Perform isolation procedures on pad mounted high voltage distribution equipment, PCK 2b

ETCA

J3AZR3E051 008 - High Voltage Systems Maintenance - PDS Code EJ8 - DOD 721 - Sheppard/4 wk/MASL D148111 -

Provides training in the knowledge and skills needed to maintain and repair High Voltage distribution systems. The scope of training includes theory and maintenance of energized overhead and underground electrical distribution systems and associated equipment, types of high voltage systems, system components and their purpose; the types, use, and testing of high voltage electrical maintenance equipment such as rubber protective equipment and hot line tools. Trainees will work energized overhead distribution systems with voltages ranging from 2,400 to 12,470 from wooden poles and isolated basket. They will also work on energized underground distribution systems with voltages from 2,400 to 12,470. Safety is discussed while performing energized and de-energized system maintenance and repair on selected pieces of distribution and substation equipment.

Prerequisites: AFSCs 3E051 or civilian equivalent. Upon arrival for training, the student must be able to demonstrate proficiency in climbing wooden poles, using gaffs, to a height of 40 feet and work safely from that height. Personnel in retraining must have a minimum of 6 months of experience after being awarded their 5-level AFSC. International students should possess a working knowledge of overhead distribution systems. ECL 70.

Special Requirements: Must be current in CPR certification and present CPR card upon arrival for training.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed climbing boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 009 High Voltage Cable Testing and Splicing
CTS

Delete item 1c. Cite causes of underground cable failure

Delete item 1e. Determine underground cable failure

Add item 1f. Specify steps to installing underground cable, PCK b

Add item 3b. Perform a Tape splice, PCK 2b

Delete item 3c. Perform a Hybrid splice, PCK 2b

Add item 3d. Perform a Pre-mold splice, PCK 2b

Change PCK item 3e. Perform a T splice PCK 2b

Add items 3f. Perform a Pre-mold termination PCK 2b
3g. Perform a Porcelain type termination PCK 2b
3h. Perform a Loadbreak Elbow termination PCK 2b

4. Cite safety requirements applicable to Underground Distribution Systems PCK B

ETCA
J3AZR3E051 009 - High Voltage Cable Testing and Splicing - PDS Code 9EK - DOD 721 - Sheppard/1 wk 3 days/MASL D148164 -

Provides training in the knowledge and skills needed to perform splicing, termination and testing of high voltage cable. The scope of training includes the types of underground distribution systems, the types, use, and testing of underground cables, the preparation of Pre-mold, hybrid, and T-splices, the preparation of Pre-mold, porcelain and LoadBreak terminations. Safety is discussed while performing energized test on cable.

Prerequisites: AFSCs 3E051 or civilian equivalent.

International students should possess a working knowledge of underground distribution systems. ECL 70 SA.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 006 Intrusion Detection Systems (IDS) Installation and Maintenance
CTS

Item 1. Change PCK from "A" to "B"

Item 2d. Change PCK from "b" to "2b"

Item 4 b & c. Change PCK from "2b" to "b"

Add items: 10. INFRARED MOTION SENSOR

a. Installation procedures	PCK	b
b. Connect	PCK	2b
c. Test	PCK	2b

Item 11. Change PCK from "1a" to "2b"

Add items: 12d. Install

(1.) Data Transmitter		2b
(2.) SM-1000	2b	
(3.) SMART	2b	

13. ADVANTOR SYSTEM

a. Operational characteristics		B
b. Retrofit Installation-	2b	
c. Connect		2b
d. Test		2b
e. Troubleshoot		2b

ETCA

J3AZR3E051 006 - Intrusion Detection Systems (IDS) Installation and Maintenance - PDS Code (will be changed) - Sheppard/2 wk-proposed 3 wk -

This course provides training in the knowledge and skills necessary to install and maintain intrusion detection systems such as JSIIDS, VINDICATOR, and ADVANTOR. The scope of training includes knowledge of installation procedures, operating principles of equipment, and troubleshooting techniques and procedures. Practical experience is given in electrically connecting and testing equipment typical of vibration, capacitive, mechanical, and ultrasonic interior detection systems and determining causes of system malfunctions.

Prerequisites: AFSCs 3E051 or civilian equivalent.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3AZR3E051 007 AIRFIELD LIGHTING SYSTEMS
CTS

Add items: 1. AIRFIELD LIGHTING SYSTEM CONFIGURATION

a. Types	A
b. Purposes	B

Add items: 2b. Solid state

(1) Components	B
(2) Operating Principles	B

Change PCKs:

	Old	**New**
2c. Maintenance		
(1) Test electrical components	2b	1a
(2) Troubleshoot system	2b	1b
(3) Adjust system components	2b	1a
2d. Repair		
(1) Disassemble lighting unit	2b	1a
(2) Assemble lighting unit	2b	1a

Add items:

3. APPROACH SLOPE PATH INDICATORS		
a. Visual approach slope indicator (VASI)		
(1) Components	-	B
(2) Operating Principles	-	B
(3) Maintenance		
(a) Troubleshoot system	-	1b
(b) Adjust system components	-	1b
b. Precision approach path indicator (PAPI)		B
(1) Components	-	B
(2) Operating Principles	-	B
(3) Maintenance		
(a) Troubleshoot system	-	1b
(b) Adjust system components	-	1b

Add items:

4. AIRFIELD LIGHTING SYSTEM ASSOCIATED COMPONENTS		
a. Component Types		
(1) Constant current regulators	-	B
(2) Runway/taxiway fixtures	-	B
(3) Control circuits	-	B
b. Maintenance		
(1) Inspect	-	1b
(2) Test	-	1b
(3) Troubleshoot	-	1b

ETCA
J3AZR3E051 007 - Airfield Approach Lighting, Condenser Discharge - PDS Code (will change) - Sheppard/1 wk 3 days - MASL D148137 -

This course provides training in the knowledge and skills needed to perform servicing, inspection, repair, and troubleshooting of condenser discharge airfield approach lighting systems. The scope of training includes theory and methods used to establish and maintain condenser discharge airfield lighting systems, identification and location of lighting system components, construction features, operating principles, lighting system technical information sources, circuitry of the light assemblies, master sequence timer, monitor control equipment and power supply. Practical experience in the inspection, troubleshooting, maintenance of system components and equipment.

Prerequisites: AFSC 3E051 or civilian equivalent. ECL 70 SA.

Uniform Requirements: Battle dress uniform (BDU)/Work utility clothing (for civilians) and safety-toed boots are considered uniform of the day for this course.

Quota Control: 2 AF/DOP.

J3ABR3E031 005- Electrical Systems Apprentice, Mission Ready Airman (MRA)

No changes

ATTACHMENT 6

Electrical Systems U&TW
Action Items

ITEM	OPR/OCR	ECD	COMP
1. ContactAFPC/DPPAC and request the recommended changes to AFMAN 36-2108 **STATUS:**	**OPR: HQ AFCESA/CEOT SMSgt Deese**	**Apr 99**	
2. Make necessary changes to CFETP as specified by workshop members **STATUS:**	**OPR: 366th TRS/TTRT Ms Haris Georges** **OCR: HQ AFCESA/CEOT SMSgt Deese**	**Jan 00**	
3. Complete apprentice course development/Implement first class **STATUS:**	**OPR: 366 TRS/TTED Mr Cheatle/Odorico**	**Jul 00 / Oct 00**	
4. Complete CDC development **STATUS:**	**OPR: 366 TRS/TTED MSgt Kappes/TSgt Rak**	**A-Jul 00 B-Jan 01**	
5. Make all changes to supplemental courses and changes to the ETCA **STATUS:**	**OPR: 366th TRS/TTRT/TTED Ms Haris Georges/ Mr Cheatle/TSgt Williams**	**Feb – Sep 00**	
6. Review AFQTP module 18 for complete core task coverage **STATUS:**	**OPR: ACC / MSgt Mitchell**	**Jan 00**	
7. Identify requirements for Grounding and Lightning Protection supplemental course **STATUS:**	**OPR:HQ AFCESA/CEOT SMSgt Deese** **OCR: 366 TRS/TTRT Ms Georges**	**Mar 00**	
8. Identify requirements for NEC supplemetal course **STATUS:**	**OPR:HQ AFCESA/CEOT SMSgt Deese** **OCR: 366 TRS/TTRT Ms Georges**	**Mar 00**	

ATTACHMENT 7

99 3E0X1 U&TW RESULTS
(ELECTRICAL SYSTEMS)

	Pre-Nov 99 U&TW	Post-Nov 99 U&TW
Total 5-level	72	56
core tasks		
Total 7-level	10	4
core tasks		
Total core tasks	**82**	**60**
5-lv core tasks	18	7
cert. at school		
7-lv core tasks	0	0
cert. at school		
Total # tasks		
cert. at school	35	10
Total core tasks		
cert. at CE unit	64	53
*Total ♦ Tasks	17	37
♦ cert. at school	5	**0

OVERALL RESULTS: Prior to the Nov 99 U&TW, 64 core tasks required certification at the duty location. After the 99 U&TW, 53 core tasks require certification at the duty location. The overall training load at the duty location lessened by 11 core tasks.

***NOTE:** Six diamond tasks were broken down into 30 sub-tasks. Does not require additional training, just breaks group tasks down into individual certification tasks. In reality, seven less diamond tasks after the U&TW.

****NOTE:** Six diamond tasks were identified as being trained to the 3c level at the school prior to the U&TW. Three of those tasks (EALS installation, HE and HF electrical distribution system installation) required a group to perform the task and in reality were not trained to an individual certification level. Additionally, 5-levels are not likely to perform these three tasks solo within the first year on-the-job. The group felt the other three diamond tasks [install, operate, and maintain Remote Area Lighting System (RALS)] did not need to be trained to the 3c level because they also were not likely to be performed solo within the first year on-the-job.

ATTACHMENT 8